Proceeding of

RT-Cloud 2024

The Third International Workshop on Real-Time Cloud Systems

July 9th, 2024, Lille, France

Held in conjunction with

The 36th Euromicro conference on real-time systems (ECRTS 2024)

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In memory of Daniel Bristot de Oliveira

We are deeply saddened to announce that Daniel, a cherished member of our TPC, passed away far too soon on July 24 at the age of 37. Daniel has been a brilliant student, a creative researcher, an exceptional developer with hundreds of contributions to the Linux kernel, and, most of all, a good friend to many of us.

RiP, Daniel

Organizers

Workshop Chairs

- Johan Eker (Lund University/Ericsson)
- Luca Abeni (Scuola Superiore Sant'Anna - luca.abeni@santannapisa.it)
- Gautam Gala (University of Kaiserslautern-Landau - gala@eit.uni-kl.de)

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Publicity Chair

- Remo Andreoli (Scuola Superiore Sant'Anna)

Technical Program Committee

- Gerhard Fohler (University of Kaiserslautern-Landau)
- Tommaso Cucinotta (Scuola Superiore Sant'Anna)
- Schahram Dustdar (Technical University of Vienna)
- Paul Pop (Technical University of Denmark)
- Daniel Bristot de Oliveira (Red Hat)
- Dario Faggioli (Suse)

Keynote: Safety-critical cloud applications

by Dr. George Violettas,
Deputy Director of Research and Technology Department,
SYSGO GmbH, Germany.

Abstract

In the rapidly evolving landscape of cloud/edge computing, real-time operating systems (RTOS), can offer robust, efficient, and secure solutions in several areas. Cloud computing provides scalable resources, yet it introduces latency and security concerns. On the other hand, Edge computing addresses latency and security by processing data closer to the source. However, it faces challenges concerning maintaining consistency, reliability, and connectivity across constrained, distributed, and potentially mobile nodes. RTOSs are critical for such a landscape since they balance resource limitations with high performance and security. Challenges include data integrity, complexity, and interoperability while satisfying safety/security standards. Addressing these issues is essential in domains like autonomous vehicles, industrial automation, and safety-critical infrastructure among others.

Presentation topics include:

1. Speaker/SYSGO Short Introduction
2. PikeOS/ElinOS Intoduction
3. SIL4 CLOUD: Digitale Schiene Deutschland
4. Cloud Solutions: SYSGO in IPCEI-CIS Program
5. Safe Secure Smart Cloud Gateway: From concept to product

Speaker Bio

Dr. George Violettas holds a PhD in Network Control and Security for the Internet of Things. He served as a senior research fellow for four Horizon 2020 European projects. He is currently the deputy manager of the R&D department and project manager for several EU projects at SYSGO GmbH, Germany. With over 15 years in the ICT industry, he has held roles such as CIO, R&D Officer, Project Manager, Software Engineer, and ICT Consultant for various European companies. Additionally, he has over 15 years of experience as an assistant professor and lecturer in universities, vocational institutes, and colleges in the Gulf region and Greece. His research focuses on IoT-cloud interfacing and security, with numerous cited publications in top journals and conferences. His future research aims to integrate IoT with blockchain to enhance identification, authentication, and availability.

List of Accepted papers

Ahmed Al Bayati and Karl-Erik Årzén. "Dynamic Offloading of Control Algorithms to the Edge using 5G and WebAssembly".

Gautam Gala, Tilmann Unte, Luiz Maia, Johannes Kühbacher, Isser Kadusale, Mohammad Ibrahim Alkoudsi, Gerhard Fohler, and Sebastian Altmeyer. "Safety-Critical Edge Robotics Architecture with Bounded End-to-End Latency".

Marco Barletta, Francesco Boccola, Marcello Cinque, Luigi De Simone, Raffaele Della Corte and Daniele Ottaviano. "Integrating Containers and Partitioning Hypervisors for Dependable Real-time Industrial Clouds".

Christian Göttel, David Kozhaya, Enrico Fregnan, Philipp Sommer and Sandro Schönborn. "Orchestration Done Upside Down: Self-aware Applications for Substation Automation".